AMENDMENTS TO THE CLAIMS

1-41. (Cancelled).

42. (Previously Presented) An oligonucleotide consisting of:

(a) one concatenation coding for a polypeptide with formula $(P\text{-}K)_n$, where:

n is selected from the group consisting of 3 (SEQ ID NO:12), 4 (SEQ ID NO:13), 5 (SEQ ID NO:14), 6 (SEQ ID NO:15), 7 (SEQ ID NO:16), 8 (SEQ ID NO:17), 9 (SEQ ID NO:18), 10 (SEQ ID NO:19), and 15 (SEQ ID NO:20);

P represents a proline amino acid residue;

K represents a lysine amino acid residue;

the symbol "-" represents a bond between the two amino acid residues, the n (P-K) units also being bonded together by such bonds; and

(b) optionally at least one lysine residue at the 5' end or the 3' end of said concatenation, or both.

43. (Previously Presented) An oligonucleotide consisting of:

(a) one concatenation coding for a polypeptide with formula $(P\text{-}K)_n$, where n is selected from the group consisting of 4 (SEQ ID NO:13), 6 (SEQ ID NO:15), 7 (SEQ ID NO:16), 8 (SEQ ID NO:17), 9 (SEQ ID NO:18), 10 (SEQ ID NO:19), and 15 (SEQ ID NO:20), where P represents a proline amino acid residue, K represents a lysine amino acid residue, and the symbol "-" represents a bond

between the two amino acids residues, the n (P-K) units also being bonded together by such bonds; and

(b) one or more codons at the 5' or 3' end of said concatenation, wherein the polypeptide coded for by said oligonucleotide, when incorporated into a γ-zein protein at an allowable site, allows for expression of the modified γ-zein protein in a plant cell and allows for similar or identical localization of said modified γ-zein protein as compared to the unmodified protein in a plant cell.

44. (Cancelled).

45. (Previously Presented) The oligonucleotide of claim 43, wherein said one or more codons comprise at least one lysine residue, wherein said at least one lysine residue is at the 5' end or the 3' end of said concatenation, or both.

46-50. (Cancelled).

51. (Withdrawn) The nucleotide sequence according to claim 48, wherein the coding nucleotide concatenation codes for a protein reserve naturally produced by a plant from the legume or crucifer family.

52-55. (Cancelled).

56. (Withdrawn) The nucleotide sequence according to claim 48, wherein the coding nucleotide concatenation codes for a protein reserve of a plant selected from the following: soya, sunflower, tobacco, wheat, oats, alfalfa, rice, oilseed rape, sorghum, and Arabidopsis thaliana.

57-64. (Cancelled).

65. (Withdrawn) A polypeptide coded by a sequence according to claim 47.

66. (Withdrawn) A lysine-enriched modified maize γ-zein, which is coded by a nucleotide sequence according to claim 54.

67. (Withdrawn) A lysine-enriched modified maize γ-zein, the amino acid sequence of which is modified by at least one polypeptide with formula $(P\text{-}K)_n$ or with formula $2K(P\text{-}K)_n$, where:

n is a whole number of 2 or more;

P represents a proline amino acid residue;

K represents a lysine amino acid residue;

the symbol "-" represents a bond between the two amino acid residues, in particular a peptide type bond, the n (P-K) units being bonded

together by bonds, in particular peptide type bonds, said polypeptide having formula $(P\text{-}K)_n$ or $K\text{-}(P\text{-}K)_n$ being substituted for a sequence naturally present in the normal maize γ-zein or being inserted with deletion of one or more amino acids of the amino acid sequence for normal maize γ-zein, or being added to the normal γ-zein amino acid sequence, the insertion site for the polypeptide being selected such that:

when the modified lysine-rich γ-zein is produced in a host cell, in particular in a plant cell, it is localized in identical or similar manner to the normal maize γ-zein which would be produced under the same conditions in the same host cell; and/or

the modified maize γ-zein is recognized by antibodies directed against the normal maize γ-zein.

68. (Withdrawn) The modified maize γ-zein according to claim 67, which is the protein P20γZ or the protein H30γZ or the protein H45γZ.

69-75. (Cancelled).

76. (Withdrawn) The host cell according to claim 71, which is a soya, sunflower, tobacco, wheat, oats, alfalfa, rice, oilseed rape, sorghum or Arabidopsis cell.

77-83. (Cancelled).

84. (Previously Presented) An oligonucleotide consisting of:

(a) a concatenation coding for a polypeptide with formula $(P\text{-}K)_n$, where:

n is selected from the group consisting of 4 (SEQ ID NO:13), 5 (SEQ ID NO:14), 6 (SEQ ID NO:15), 7 (SEQ ID NO:16), 8 (SEQ ID NO:17), 9 (SEQ ID NO:18), 10 (SEQ ID NO:19), and 15 (SEQ ID NO:20);

P represents a proline amino acid residue;

K represents a lysine amino acid residue;

The symbol "-" represents a bond between the two amino acid residues, the n (P-K) units also being bonded together by such bonds, wherein said concatenation is interrupted once between two (P-K) units by amino acids that are neither P nor K; and

(b) optionally at least one lysine residue at the 5' end or the 3' end of said concatenation, wherein the polypeptide coded for by said oligonucleotide, when incorporated into a γ-zein protein at an allowable site, allows for expression of the modified γ-zein protein in a plant cell and allows for similar or identical localization of said modified γ-zein protein as compared to the unmodified protein in a plant cell.

85. (Previously Presented) An oligonucleotide consisting of:

(a) one concatenation coding for a polypeptide with formula $(P\text{-}K)_n$, where n is selected from the group consisting of 7 (SEQ ID NO:16), 8 (SEQ ID NO:17), 9 (SEQ ID NO:18), 10 (SEQ ID NO:19), and 15 (SEQ ID NO:20), where P represents a proline amino acid residue, K represents a lysine amino acid residue, the symbol "-" represents a bond between the two amino acid residues, the n (P-K) units also being bonded together by such bonds, wherein said concatenation is interrupted once between two (P-K) units by amino acids that are neither P nor K; and

(b) one or more codons at the 5' end or the 3' end of said concatenation, wherein the polypeptide coded for by said oligonucleotide, when incorporated into a γ-zein protein at an allowable site, allows for expression of the modified γ-zein protein in a plant cell and allows for similar or identical localization of said modified γ-zein protein as compared to the unmodified protein in a plant cell.

86. (Previously Presented) The oligonucleotide of claim 42, 43, 84, or 85, wherein said bonds are peptide bonds.

87. (Cancelled).

88. (Previously Presented) The oligonucleotide of claim 84, wherein said interruption comprises at least one lysine codon at the 3' end of said interruption.

89. (Previously Presented) An oligonucleotide having the formula K-(P-K)$_4$ (SEQ ID NO:21), 2K(P-K)$_4$ (SEQ ID NO:23), or K-(P-K)$_4$ E-F-K-(P-K)$_4$ (SEQ ID NO: 24).

90. (Currently Amended) A recombinant nucleotide sequence comprising a nucleic acid coding for a maize γ-zein of 28 kDa, wherein said recombinant nucleotide sequence further comprises an oligonucleotide:

(a) one concatenation coding for a polypeptide with formula (P-K)$_n$, where n is selected from the group consisting of 2 (SEQ ID NO:25), 3 (SEQ ID NO:12), 4 (SEQ ID NO:13), 5 (SEQ ID NO:14), 6 (SEQ ID NO:15), 7 (SEQ ID NO:16), 8 (SEQ ID NO:17), 9 (SEQ ID NO:18), 10 (SEQ ID NO:19), and 15 (SEQ ID NO:20), or

(b) one concatenation coding for a polypeptide with formula (P-K)$_n$, where n is selected from the group consisting of 2 (SEQ ID NO:25), 3 (SEQ ID NO:12), 4 (SEQ ID NO:13), 5 (SEQ ID NO:14), 6 (SEQ ID NO:15), 7 (SEQ ID NO:16), 8 (SEQ ID NO:17), 9 (SEQ ID NO:18), 10 (SEQ ID NO:19), and 15 (SEQ ID NO:20), said concatenation being interrupted once between two (P-K) units by amino acids that are neither P nor K;

where P and K represent respectively a proline and a lysine amino acid residue, the symbol "-" represents a bond between the two amino acids residues, the n (P-K) units also being bonded together by such bonds; said concatenation being inserted at one site of the nucleic acid selected such that:

i) expression of the recombinant nucleotide sequence in a particular plant cell enables the modified γ-zein to be produced, wherein said modified γ-zein is localized in that cell in a manner identical to or similar to the normal protein reserve which would be expressed in the same cell under the same conditions by the corresponding normal nucleic acid, or

ii) the modified γ-zein coded by the recombinant nucleotide sequence is immunologically recognized by antibodies produced against the corresponding normal γ-zein.

91. (Previously Presented) The recombinant nucleotide sequence of claim 90, wherein the nucleic acid coding for the maize γ-zein has the sequence set forth in SEQ ID NO:6.

92. (Previously Presented) The recombinant nucleotide sequence of claim 90, wherein the oligonucleotide is inserted in place of or following a Pro-X domain or in a Pro-X domain naturally present in the maize γ-zein.

93. (Previously Presented) The recombinant nucleotide sequence of claim 90, wherein the sequence is under the control of an expression promoter.

94. (Previously Presented) The recombinant nucleotide sequence of claim 93, wherein the promoter is a specific promoter for a given cell tissue or a promoter specific for expression in grains or in the leaves of plants.

95. (Previously Presented) The recombinant nucleotide sequence of claim 93, wherein the expression promoter is that of maize γ-zein.

96. (Previously Presented) The recombinant nucleotide sequence of claim 93, wherein the expression promoter is the promoter CaMV35S.

97. (Previously Presented) The recombinant nucleotide sequence of claim 92, which codes for one of the polypeptides P20γZ or H45γZ having the sequence set forth in SEQ ID NO:9 or SEQ ID NO:11, respectively.

98. (Previously Presented) The recombinant nucleotide sequence of claim 90, wherein the oligonucleotide is inserted following or in place of a primary structure having tandem repeats rich in proline residues.

99. (Previously Presented) A cloning or expression vector comprising, at a site which is not essential for replication, the recombinant nucleotide sequence of claim 90.

100. (Previously Presented) A recombinant host cell comprising the recombinant nucleotide sequence of claim 90.

101. (Previously Presented) The host cell of claim 100, wherein said cell is a bacterium.

102. (Previously Presented) The host cell of claim 101, wherein said bacterium is *Escherichia coli* or *Agrobacterium tumefaciens*.

103. (Previously Presented) The host cell of claim 100, which is a plant cell.

104. (Previously Presented) The host cell of claim 103, wherein said plant cell is a plant seed cell.

105. (Previously Presented) The host cell of claim 104, wherein said plant seed cell is a cell from maize seed endosperm.

106. (Previously Presented) The host cell of claim 105, wherein the recombinant nucleotide sequence is stably integrated in the genome of the host cell.

107. (Previously Presented) The host cell of claim 105, which produces a lysine-enriched modified maize γ-zein upon expression of the recombinant nucleotide sequence.

108. (Previously Presented) A maize plant producing a polypeptide encoded by the recombinant nucleotide sequence of claim 90.

109. (Previously Presented) A method for producing a maize plant or maize seeds expressing a modified γ-zein protein reserve, which comprises the steps of:

a) transforming a plant cell with the recombinant nucleotide sequence of claim 90, or the vector of claim 99, under conditions enabling the γ-zein modified protein reserve coded by the nucleotide sequence to be expressed in a stable and functional manner;

b) regenerating plants from the plant cell transformed in step a), to obtain plants expressing the modified γ-zein protein reserve; and

c) optionally obtaining seeds from the modified plants obtained in step b).

110-113. (Cancelled)

114. (Currently Amended) Maize seeds comprising a γ-zein encoded by a recombinant nucleotide sequence comprising a nucleic acid coding for the γ-zein and, inserted at one site of the nucleic acid, an oligonucleotide consisting of one concatenation coding for a polypeptide with formula $(P\text{-}K)_n$, where:

(a) n is selected from the group consisting of 2 (SEQ ID NO:25), 3 (SEQ ID NO:12), 4 (SEQ ID NO:13), 5 (SEQ ID NO:14), 6 (SEQ ID NO:15), 7 (SEQ ID NO:16), 8 (SEQ ID NO:17), 9 (SEQ ID NO:18), 10 (SEQ ID NO:19), and 15 (SEQ ID NO:20) or;

(b) n is selected from the group consisting of 2 (SEQ ID NO:25), 3 (SEQ ID NO:12), 4 (SEQ ID NO:13), 5 (SEQ ID NO:14), 6 (SEQ ID NO:15), 7 (SEQ ID NO:16), 8 (SEQ ID NO:17), 9 (SEQ ID NO:18), 10 (SEQ ID NO:19), and 15 (SEQ ID NO:20), said concatenation being interrupted once between two (P-K) units by amino acids that are neither P nor K;

where P represents a proline amino acid residue, K represents a lysine amino acid residue, and the symbol "-" represents a bond between the two amino acid residues, the n (P-K) units also being bonded together by such bonds;

wherein the insertion site of the oligonucleotide is selected such that:

i) expression of the recombinant nucleotide sequence in a particular plant cell enables a modified γ-zein protein reserve to be produced, wherein said γ-zein protein reserve is localized in that cell in a manner identical to or similar to the

normal γ-zein protein reserve which would be expressed in the same cell under the same conditions by the corresponding normal nucleic acid; or

ii) the modified γ-zein protein reserve coded by the recombinant nucleotide sequence is immunologically recognized by antibodies produced against the corresponding normal γ-zein.

115. (Previously Presented) The maize seeds of claim 114, wherein said γ-zein is a maize γ-zein of 28 kDa.

116. (Cancelled).

117. (Previously Presented) The maize seeds of claim 114, wherein said bonds are peptide-type bonds.

118. (Cancelled).

119. (Previously Presented) The maize seeds of claim 114, wherein the oligonucleotide further codes for at least one lysine residue at the 5' or 3' end and the polypeptide coded for by the oligonucleotide is present within the N-terminal domain of the maize γ-zein.

120. (Previously Presented) The maize seeds of claim 119, wherein the oligonucleotide comprising at least one concatenation codes for a polypeptide having the formula K-(P-K)$_4$ (SEQ ID NO:21) or 2K(P-K)$_4$ (SEQ ID NO:23).

121. (Previously Presented) The maize seeds of claim 114, wherein the plant protein is the maize γ-zein having the sequence set forth in SEQ ID NO:6.

122. (Previously Presented) The maize seeds of claim 121, wherein the oligonucleotide is inserted in place of or following a Pro-X domain or in a Pro-X domain naturally present in the maize γ-zein.

123. (Previously Presented) The maize seeds of claim 122, wherein the nucleotide sequence codes for one of the polypeptides P20γZ or H45γZ having the sequence set forth in SEQ ID NO:9 or SEQ ID NO:11, respectively.

124. (Previously Presented) A cloning and/or expression vector, which is one of plasmids pP20γZ (CNCM N° I-1640), pH30γZ or pH45γZ (CNCM N° I-1639).

125. (Previously Presented) The maize seeds of claim 114, wherein the oligonucleotide codes for a polypeptide having the formula K-(P-K)$_4$-E-F-(P-K)$_4$ (SEQ ID NO:24).

126. (Currently Amended) A recombinant nucleotide sequence comprising a nucleic acid coding for a maize γ-zein of 28 kDa, wherein said recombinant nucleotide sequence further comprises an oligonucleotide consisting of:

(a) one concatenation coding for a polypeptide with formula (P-K)$_n$, where n is selected from the group consisting of 2 (SEQ ID NO:25), 3 (SEQ ID NO:12), 4 (SEQ ID NO:13), 5 (SEQ ID NO:14), 6 (SEQ ID NO:15), 7 (SEQ ID NO:16), 8 (SEQ ID NO:17), 9 (SEQ ID NO:18), 10 (SEQ ID NO:19), and 15 (SEQ ID NO:20) and one or more codons at the 5' or 3' end of said concatenation, or

(b) one concatenation coding for a polypeptide with formula (P-K)$_n$, where n is selected from the group consisting of 2 (SEQ ID NO:25), 3 (SEQ ID NO:12), 4 (SEQ ID NO:13), 5 (SEQ ID NO:14), 6 (SEQ ID NO:15), 7 (SEQ ID NO:16), 8 (SEQ ID NO:17), 9 (SEQ ID NO:18), 10 (SEQ ID NO:19), and 15 (SEQ ID NO:20), and one or more codons at the 5' or 3' end of said concatenation, wherein said concatenation is interrupted once between two (P-K) units by amino acids that are neither P nor K;

where P and K represent respectively a proline and a lysine amino acid residue, the symbol "-" represents a bond between the two amino acids residues,

the n (P-K) units also being bonded together by such bonds; and wherein said oligonucleotide is inserted at one site of the nucleic acid selected such that:

i) expression of the recombinant nucleotide sequence in a particular plant cell enables the modified γ-zein to be produced, wherein said modified γ-zein is localized in that cell in a manner identical to or similar to the normal protein reserve which would be expressed in the same cell under the same conditions by the corresponding normal nucleic acid; or

ii) the modified γ-zein coded by the recombinant nucleotide sequence is immunologically recognized by antibodies produced against the corresponding normal γ-zein.

127. (Previously Presented) The recombinant nucleotide of claim 126, wherein said one or more codons comprise at least one lysine residue at the 5' end or the 3' end of said concatenation.

128. (Previously Presented) The recombinant nucleotide of claim 90, wherein said interruption comprises at least one lysine codon at the 3' end of said interruption.

129. (Previously Presented) A plant producing the polypeptide encoded by the recombinant nucleotide sequence of claim 90 or 126.

130. (Previously Presented) A method for producing plants or seeds expressing a modified γ-zein protein reserve comprising the steps of:

(a) transforming a plant cell with the recombinant nucleotide sequence of claim 90, or the vector of claim 99, under conditions enabling the modified γ-zein encoded by the recombinant nucleotide sequence to be expressed in a stable and functional manner;

(b) regenerating plants from the plant cell transformed in step a), to obtain plants expressing the modified γ-zein; and

(c) optionally obtaining seeds from the modified plants in step (b).

131. (Currently Amended) Seeds comprising a γ-zein ~~γ-zein~~ encoded by a recombinant nucleotide sequence comprising a nucleic acid coding for the γ-zein and, inserted at on site of the nucleic acid, an oligonucleotide formed by one concatenation coding for a polypeptide with formula $(P\text{-}K)_n$, where:

n is selected from the group consisting of 2 (SEQ ID NO:25), 3 (SEQ ID NO:12), 4 (SEQ ID NO:13), 5 (SEQ ID NO:14), 6 (SEQ ID NO:15), 7 (SEQ ID NO: 16), 8 (SEQ ID NO:17), 9 (SEQ ID NO:18), 10 (SEQ ID NO: 19) and 15 (SEQ ID NO:20);

P represents a proline amino acid residue;

K represents a lysine amino acid residue; and

the symbol "-" represents a bond between the two amino acid residues, the n (P-K) units also being bonded together by such bonds;

wherein the insertion site of the oligonucleotide is selected such that:

i) expression of the recombinant nucleotide sequence in a particular plant cell enables a modified γ-zein to be produced, wherein said modified γ-zein is localized in that cell in a manner identical to or similar to the normal γ-zein which would be expressed in the same cell under the same conditions by the corresponding normal nucleic acid; or

ii) the modified γ-zein encoded by the recombinant nucleotide sequence is immunologically recognized by antibodies produced against the corresponding normal gamma zein.